REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)* 16-05-2003	2. REPORT TYPE FINAL	3. DATES COVERED *(From - To)*

4. TITLE AND SUBTITLE

Expeditionary Maneuver: A Synthesis of Network Centric Concepts

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

LtCol Paul K. Hilton

Paper Advisor (if Any): Prof Theodore L. Gatchel

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Joint Military Operations Department
Naval War College
686 Cushing Road
Newport, RI 02841-1207

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Distribution Statement A: Approved for public release; Distribution is unlimited.

13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.

14. ABSTRACT

Expeditionary Maneuver Warfare is a unique and appropriate concept for 21st century warfare because it is a synthesis of the best of traditional realistic warfare concepts, stable maneuver warfare doctrine and the contemporary concepts of network centric warfare (NCW). The Marine Corps' EMW concept emphasizes the realities of confusion, human factors, danger and uncertainty to craft a concept that relies on well trained and motivated people. The NCW concept is about how the network will provide synergy and added combat power by accomplishing tasks that formerly required standing forces. EMW is about tailored forces to accomplish a mission and using maneuver to get there. NCW is about the network helping to share resources in order to get the right combat capability to the right place and time. EMW expects a robust network to enable many of the concepts tenets. However, it is a concept that will not be dependent on the network. The two concepts are compatible articulations of modern warfare.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Chairman, JMO Dept
a. REPORT UNCLASSIFIED	**b. ABSTRACT** UNCLASSIFIED	**c. THIS PAGE** UNCLASSIFIED		19	**19b. TELEPHONE NUMBER** *(include area code)* 401-841-3556

Standard Form 298 (Rev. 8-98)

NAVAL WAR COLLEGE
Newport, RI

Expeditionary Maneuver: A Synthesis of Network Centric Concepts

By

Paul K. Hilton
LtCol USMC

A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

16 May 2003

Prof Theodore L. Gatchel
Faculty Advisor

1

Table of Contents

Introduction

In 2001 the U.S. Marine Corps published its capstone concepts document, expeditionary maneuver warfare (EMW).   The thesis of this paper is that EMW is a unique and appropriate concept for 21st century warfare because it is a synthesis of the best of traditional realistic warfare concepts, stable maneuver warfare doctrine and the contemporary concepts of network centric warfare (NCW).

This essay will summarize some of the highlights of EMW in order to show the concept's basis in traditional military theory and maneuver warfare doctrine.   Following that will be a summary of some tenets of NCW. Then the essay will discuss the links between the two concepts. Finally, the closing will contain some cautions of how NCW can go too far in breaking up components of military force, which could lead to a declination of military capability.

Expeditionary Maneuver Warfare's Realistic Foundation

Expeditionary Maneuver Warfare recognizes that warfare is an uncertain and chaotic environment. Human conflict is characterized by uncertainty because human reaction to conditions is rarely predictable.   For any particular event, experts often can predict a range of possible human reactions to that event. Yet, that range of responses may be very broad.   Since the possible human responses to an event can vary so greatly it is difficult to prepare an answer for all possible outcomes. The only appropriate answer is to have forces available that are at all levels flexible and adaptable. It is a tenet of EMW that Marine Air Ground Task Forces provide the joint task force commander (CJTF) with the flexible and adaptable force to respond to this range of ambiguity.

While the EMW concept accepts that war is chaotic because it is a human endeavor, it is nevertheless an objective oriented concept. It is a concept with a goal. In the EMW concept the goal is for Marine forces to "shatter the adversary's cohesion."[1] Yet predicting precisely when that cohesion will shatter under pressure is difficult. Then even after the enemy's organized forces melt away, potential for various levels of civil unrest and paramilitary activities remain.   Current and near-future intelligence capabilities may not be able to predict what outcomes will occur because these require highly subjective interpretations of the enemy's society, political structure and military organizational attributes.   So, Marine forces under EMW will adapt to pursue the objective appropriately as the situation develops.

The EMW concept moreover accepts the battlefield as a hostile, violent, and even austere environment. For operational commanders, it is valuable to have combined arms capabilities that by their culture accept these conditions and even thrive in them. It adds to his flexibility to shape the battlespace with Marine forces that are ready to conduct forcible entry in a hostile environment under the most difficult of conditions.

Today and in the future, warfare concepts must accommodate and even facilitate joint and combined operations. Every fight the nation wages from now on will be a joint fight. Integration of land, sea, air and special operations capabilities will be central. Moreover, the joint force packages must be modular and customized for the mission. The Marine Corps EMW concept recognizes a "single integrated battlespace." [2] The Marine Corps paradigm of training, deploying and employing as Marine Air Ground Task Forces

---

[1] Michael W. Hagee, "The Timeless Realities of Human Conflict: I MEF (I Marine Expeditionary Force) Focuses on "a Single Integrated Battlespace,"' *Sea Power* 44, no. 11. p. 35.
[2] Hagee, " The Timeless Realities of Human Conflict." 35.

(MAGTF) fits exactly into this integrated concept of warfare. The Marine Corps MAGTFs provide in once service a complete package of these integrated capabilities. While this combination in one service of land, air and sea capabilities is not by definition joint, it does make the Marine Corps uniquely experienced in the factors of the other three services. Also in conjunction with the need for customized joint force packages, the EMW concept offers MAGTF combined arms packages that can be uniquely tailored depending upon the peculiarities of the mission.[3]

Some would argue that the Marine Corps is not joint because it has tried to have the capabilities of an air, land and sea force alone. However, this argument cannot stand based on Marine Corps practice and doctrine. EMW stresses close reliance on the sea by using it as maneuver space, which will require intimate work with the US Navy. Marine aviation is dependent strongly on the US Navy and the US Air Force both in aviation programs and tactical command and control procedures. Marine ground operations draw largely from US Army doctrine and C2 concepts. What make the Marine Corps' EMW unique is that all three components meld together tightly, and work well with the other components.

Beyond these organizational factors, the EMW concept depends on people more than on technology. "Marines focus on the force of human resolve and utilize technology to leverage the chaos and complexity of the battlefield."[4] Accordingly, the Marine Corps stresses, "training, education and opportunities for experience to foster decisiveness."[5] The Marine Corps plans to use technology to its fullest, not as an end to itself but as a

---

[3] United States Marine Corps, Marine Corps Doctrinal Publication 1-0, *Marine Corps Operations*, Washington D.C, 2-4.
[4] Ibid, 2-2

means of "leveraging" the creativity, experience and abilities of a professional force. The

Marine Corps trains for and expects decentralized decision-making, which will allow

MAGTFs to "compress the decision cycle, seize fleeting opportunities and engage the

enemy from positions of advantage."[6] This is achievable because the Marine Corps

expects to "develop leaders and staffs who function in an environment of ambiguity and

uncertainty and make timely and effective decisions under stress."[7]

Finally, at all levels of MAGTF's Marines train and think in order to maneuver.

The concept of maneuver is more than movement, but can involve movement. Maneuver

is more correctly about taking action to be at an advantage over the enemy. As we will

see shortly, in contrast to the idea of maneuver, the NCW concept expects the network to

find an actor who will be at an advantage to an enemy target instead of an actor

maneuvering into a position of advantage. (The terms "actor" and "sensor" are used by

Alberts, Grastka and Stein in the NCW book most often footnoted in this paper. A

"sensor" generally includes all capabilities that sense reality about a situation. Radar is

an example of a sensor. However, the radar could be on a platform that acts as a

"sensor."   An "actor" is an entity that takes action on a perceived situation. An "actor"

could often be a shooter.   Wherever those terms appear in this paper, it has been

consistent with this understanding of their use.)

Network Centric Warfare: is it really about warfare?

As mentioned above, the Marine Corps concept emphasizes the chaos and

uncertainty of warfare. Conversely, Network Centric Warfare is stated in sterile terms of

---

[5] Ibid.
[6] United States Marine Corps, "Expeditionary Maneuver Warfare: Marine Corps Capstone Concepts" in
United States Marine Corps Concepts and Programs 2002, 15.

input and output. Granted, in the seminal book, Network Centric Warfare by David S. Alberts and others refer to some of the dirtier aspects of warfare and mention that NCW will not obviate those aspects. However, the prevailing tenor of the work is reflective of a business process model.[8]

For any concept of war to be valid, it must address confusion on the battlefield. NCW proponents expect to alleviate much of the confusion.[9] They hope for information systems and technologies to continue to achieve near perfect information and to eliminate almost all elements of confusion.   Alberts, Grastka and Stein describe this state occurring when information is 100% timely, relevant and accurate. However, they also admit that the condition of 100% will probably never be achieved.[10] Indeed, and it may become less achievable even as it allows forces to operate faster and stealthier. In fact, the enabling functions of the computer and the network to speed up combat activities will make it harder to maintain information timeliness and relevance. Consequently, confusion on the battlefield at the operational and tactical levels will not disappear but may even increase.

NCW is a concept about information centrality. Indeed, information is central to this warfare concept and is considered an element of power, maybe even the primary element of power.[11] For example, this idea is evident in the way the Navy depicts the Forcenet approach. As is shown in the graphic representation of Seapower 21, the Navy

---

[7] Ibid, 21.
[8] David S. Alberts, John J. Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*, Washington, D.C., DoD C4ISR Cooperative Research Program, 1990. 7.
[9] Ibid, 17.
[10] Ibid, 31.
[11] Ibid, 85.

envisions the network as central to naval power.[12] Information is expected to be more "important today than the sheer numbers of weapons and platforms."[13]

The NCW concept offers new processes that proponents believe will allow the nation to employ its military capabilities in a much more efficient manner thereby reducing the number of forces and command elements needed in an area of operations (AOR). Among these new processes are new organizations and dynamic relationships. The network will facilitate these new dynamic relationships. These new relationships are established on the basis of shared information. The combined results of this sharing will result in a synergy of power on the battlefield.   The network will provide the links through disbursed entities, which will allow them to be "dynamically reallocated."[14] According to NCW advocates, this will mean deploying fewer forces than traditionally required and thereby avoiding the dangers inherent in massed concentration of forces.

This NCW thinking is reminiscent of the language of computer networking technologies, and is best illustrated using computer networks as the metaphor. In distributed computer information systems, applications and data can reside on any platform. Yet, the capabilities and data can be used by other applications on other platforms through the network connections.   The computer network concept, describes a dynamic environment where any authorized user can task any network resource.[15] Then after that resource provides service to one user, it will immediately go back to a state of readiness for another user to task it. In the context of computing resource services, this

---

[12] Admiral Vern Clark, US Navy, "United States Navy Sea Power 21: Projecting Decisive Joint Capabilities" *Proceedings,* October 2002, http://www.chinfo.navy.mil/navpalib/cno/proceedings.html, 2.
[13] Gordon R. England, Secretary of the Navy, quoted in "Transforming Marine Corps C4," by John R. Thomas BGen USMC, Marine *Corps Gazette* 86, no.8, Aug 2002, 16.
[14] Alberts, Grastka, Stein, *Network Centric Warfare*, 90.

dynamic reallocation occurs at the speed of light or nearly that fast. This leaves the user

with the sense that he has dedicated use of the resource when in reality it is being multi-

tasked. One great advantage to this concept is that the resource is more efficiently

employed than it would be if it were dedicated to a specific platform or user. In contrast,

dedicated computing resources are not optimally used. Much of the time they sit idle

while their dedicated user doesn't need them, but other users could employ that resource

if it was on the network. Providing common user access to computing resources has

proved to be a very efficient way to distribute expensive computer resources to many

users. The only limiting factors under this type of network architecture are the

bandwidth of the network and the interoperability between entities, which is

interoperability between the various applications and the various data structures.[16]

The NCW concept views military resources in much the same way the computer

scientists view networked resources. For example, an F-18 becomes a common user

asset that can provide services on request of any authorized user. Those authorized users

who could task such a resource would require some appropriate designation of command

authority. However, in NCW since traditional relationships are considered largely

inappropriate, the need to clarify carefully and clearly who has authorization to use

military resources will be paramount.

There are advantages of this construct to the joint commander. One advantage is

that, similar to the computing resources metaphor, the military resources will be more

efficiently and appropriately employed. This could be a great advantage. Clauswitz

claims that battle inherently uses resources inefficiently:

---

[15] Larry Greenemeier, "Utility Computing Meets Real Life," *Information Week* 936, April 21, 2003, 54-59.

What happens in a major battle today? The troops move calmly into position in great masses deployed in line and depth. Only a relatively small portion is involved, and is left to conduct a firefight for several hours…Gradually, the units engaged are burned out, and nothing is left but cinders, they are withdrawn and others take their place. [17]

Similarly, NCW seeks to overcome Clausewitz' lament above by using the network to task military resources dynamically. Presumably this will bring to bear those resources that are required. Then, that relatively large portion, which traditionally remained uninvolved, can stay home or better yet be used in other simultaneous operations as required. This leads to more effective military operations while avoiding the dangers incumbent with staging vast military resources for defensives purposes.[18]

Decision making processes no longer need focus on the defensive oriented approaches that were required to hedge against uncertainties (fog and friction). They can now focus on being proactive and agile.[19]

This has been a goal of military commanders and planners for years. Clausewitz recognized this need to efficiently use resources, but he saw that it was the commander's skill that made the difference as to whether forces were appropriately committed or not: "The forces available must be employed with such skill that even in the absence of absolute superiority, relative superiority is attained at the decisive point."[20] The NCW concept hopes to achieve this result through dynamically reallocating resources based on information superiority.

Another factor of the NCW concept that requires consideration is the prospect of "overlapping engagement envelopes."[21] NCW describes how dedicated sensors and

---

[16] Ibid.

[17] Carl Von Clausewitz, *On War*, Princeton, Princeton University Press, 1976, 226.

[18] Alberts, Grastka, Stein, *Network Centric Warfare*, 149.

[19] Ibid, 49.

[20] Clausewitz, *On War,* 196.

shooters interact in envelopes or wedges. They say that on a platform the sensor senses more area than the shooting capability of the platform can engage. The idea of NCW is that by sharing this excess sensing coverage among multiple shooters then a larger area of coverage can be more thoroughly engaged, which increases the overall combat power.[22] Yet, Clausewitz would call this the "skillful concentration of superior strength at the decisive point."[23] So where the classic theorist of war looks to the commander's skill, the NCW proponent believes that enhanced network information will solve the problem of concentration of superior strength at the decisive point. Expanding on the idea of envelopes the NCW concept uses a notion that they call "decoupling."

> Advances in technology provide the opportunity to move the functionality provided by platforms to either the infostructure, the sensors, or the actor, there permitting us to *decouple* functions from traditional platforms. (Italics mine)[24]

As the above comment shows, the tenets of NCW are about the efficient use of platforms. Platforms provide sensing, acting and decision functions, and can be tasked in a common user manner.

Finally, the NCW requires interoperability. Returning to the network computing resources metaphor will provide the illustration. For data to be available to several applications and computing platforms it must be stored in a format that is usable to those applications. For example if an application requires a five-digit zip code but the data is stored in a nine-digit zip code format then an interoperability problem potentially exists. An interpretive function would have to be built. The same type of interoperability issues comes into play when military resources can be tasked in a common user manner.

---

[21] Alberts, Grastka, Stein, *Network Centric Warfare*, 99.
[22] Ibid. 95
[23] Clausewitz, *On War* 197.

Operating procedure, language and vernacular, plus differences in equipment and cultures among joint military capabilities all pose opportunities for non-interoperability.

Linking Two Warfare Concepts

With this background on these two concepts, NCW and EMW, the analysis now turns more specifically to describing how the two concepts can work together to create a truly robust operational advantage to the JTF commander.

EMW is a concept that expects to operate in non-linear situations, and the network will provide a tremendous advantage to those operations. Non-linear operations gain synergistic effects by the combination of multiple simultaneous events. Non-linear operations are distinct from linear or sequential operations because they require a common understanding of the battlespace and that the commander's intent is clear and ubiquitously distributed. In NCW, when the network allows successful non-linear activities it is called "self-synchronization." Both EMW and NCW then expect that this near simultaneous cascade of attacks will shatter the enemy's cohesion and force his capitulation. Clausewitz agrees that to win ultimately requires defeating the enemy's will:

> But we should at once distinguish between three things, three broad
> objectives, which between them cover everything: the armed forces, the
> country, and the enemy's will.
> The fighting forces must be destroyed…
> The country must by occupied; otherwise the enemy could raise
> fresh forces… Yet hostile elements cannot be considered to have ended so
> long as the enemy's *will* has not been broken.[25]

The Marine Corps emphasizes maneuver as the means to influence the enemy non-linearly and thereby to shatter his will. By using maneuver combined with integrated

---

[24] Alberts, Grastka, Stein, *Network Centric Warfare*, 67.

12

fires the EMW concept will "achieve surprise, psychological shock, and momentum, which drives enemies into untenable situations."[26] The Marine Corps is articulating non-linear action against an enemy, but is using traditional terminology. Nevertheless, the network is crucial for maneuver and integrated fires to provide the synergistic affects envisioned.

The Marine Corps envisions a robust network to conduct collaborative planning, and most importantly to communicate the commander's intent. The Marine Corps expects that a well understood commander's intent along with a culture that rewards initiative and decentralized decision-making will result in speedier operations. Similarly, Alberts, Garstka and Stein state that the:

> Output of command and control consists of the decisions a commander makes, the degree to which the commander's perception of the situation and the commander's intent is shared among the forces.[27]

By sharing information among entities that have been traditionally stove-piped, the commander's perception of the situation will be enhanced. This will allow him to more appropriately craft his intent to the situation. Shared sensor resources of the network will make this possible. Shared perception combined with a universally understood intent will permit all of the military resources under a commander to understand the battle-space as he does and to act upon situations as he would. This common understanding will be available to subordinate commanders through collaborative planning tools and an enhanced common operational picture.

---

[25] Clausewitz, *On War,* 90.
[26] United States Marine Corps, "Expeditionary Maneuver Warfare," 23.
[27] Alberts, Grastka, Stein, *Network Centric Warfare*, 147.

Another, pillar of the Marine Corps' EMW concept to consider in light of NCW is support and sustainment. That is the capability of "providing focused logistics to enable power projection independent of host-nation support and against distant objectives across the breadth and depth of a theater of operations."[28] This pillar is a concept that generally goes unmentioned or unrecognized by NCW advocates. Nevertheless, sustainment must be accounted for before military resources are tasked for any mission. It is in sustainment and support through seabasing that the Marine Corps plans to rely heavily on the network.[29] Employing such network centric applications as Total Asset Visibility, Marine logisticians will be able to provide more timely and relevant support based on a common understanding of the battlespace and the commander's intent.[30] Using the network to provide improved logistics is essential in a fast paced combat environment and under austere conditions. However, because it is an austere environment Marines must be able to provide sustainment even if the network fails. Indeed many view network failure because of sabotage or breakdowns as the lurking danger that exists in NCW as operators become too reliant on the network.[31]

It is the limiting factor of interoperability and integration that the Marine Corps' EMW concept promises the greatest advantages in a network-connected environment. The Marine Corps emphasizes in all training and education a standard language and understanding of MAGTF operations and procedures. Consequently, the Marine Corps can provide tailored, task-organized forces that are able to operate seamlessly. The joint force commander can use Marine forces for objectives that require close air and ground

---

[28] United States Marine Corps, *Marine Corps Operations*, 2-14.
[29] United States Marine Corps, "Expeditionary Maneuver Warfare," 17.
[30] Ibid. 25.

coordination. The Marine Corps achieves this because it is trained and equipped to be an interoperable force. The three main elements-- air, ground and service support-- all work together under the same commander's intent, and in accordance with well understood and exercised standing procedures.   All Marines are intimately familiar with this MAGTF construct and are therefore able to adapt to nearly any tasking environment as long as that construct is generally maintained.

Finally, it is clear that the NCW concept focuses on the tactical aspects of warfare. The Marine Corps' EMW concept addresses the tactical, operational and strategic levels of war.   So, it seems that NCW as a concept provides enabling capabilities only to the tactical level of the EMW concept. However, it does not have to be that way. The concepts of NCW can be used to enable better and faster decision making at the operational level too. Information technology systems exist which can accomplish many repetitive operational level tasks. The Global Command and Control System is an example. Yet, beyond this rudimentary information technologies there are emerging technologies that can in smart ways filter the vast quantities of information to find the important nuggets. Other technologies are available that can help with course of action decisions and "what if" scenarios.   In the programming environment, the application Expert Choice is an example of an application that can allow decision makers to conduct sensitivity analysis of their courses of action (COA) and determine if there are any clear winners or losers.   If these types of applications are "netted" with intelligent databases a more accurate understanding of the operational situation is achievable. Clearly, more testing and exercising in these areas is important.

---

[31] Andrea Stone, "Room with a View," *Marine Corps Times* 5, no. 13, April 7, 2003. p.25

In the end though, military capabilities are not electronic, magnetic media as computing resources are. They are subject to the limitations of time and space. They require huge amounts of supply and are not easily replaced. While NCW offers some exciting new ways of thinking about tasking military capabilities, it does not relieve commanders of the physical limitations of time and space.

Caution

A caution is in order about the NCW concept of "decoupling." It is not clear to what level of granularity NCW expects to decouple to. For instance a ship can be a platform; an airplane can be a one as well. The question comes to mind though about a host of other military resources. Consider an infantry battalion; at what level can it be "decoupled?" Is an individual rifleman an actor or sensor that can be decoupled from his squad just because a ubiquitous network might make it possible, and at what level of granularity does decoupling become an inhibitor of combat power and not a source of increased combat power? As another example, an aircraft may be a sensor or an actor platform, but the pilot, a human, often trains in conjunction with and other elements of a squadron to do certain missions. So, to decouple an aircraft from all other squadron elements may in many cases be counterproductive to synergy. These tactical examples are given to illustrate that careless decoupling of combat capabilities could be detrimental to achieving an objective at any level.

The decoupling issue is a concern especially in relation to how MAGTFs are deployed and employed. Marine forces work smoothly as team and provide tremendous synergy of combat power. Decoupling that team can be detrimental to the MAGTF combat capability. Yet, the NCW proponents envision that all platforms and sensors can

be tasked and re-tasked much like common user resources. Indeed componency, especially joint air component commanders often views Marine aviation as just another group of platforms, actor/sensors entities, which are available for joint tasking in absence of the other elements of the MAGTF. While this may seem to be an efficient use of an aviation resource it may in fact be damaging to the overall mission. This level of granularity in tasking weakens the entire MAGTF construct and each element in particular. Marine aviation trains constantly in conjunction with ground combat elements. Their culture and ethos is to provide the integrated fires for the MAGTF ground combat element. Moreover, Marine logistics exists with the construct of supporting both Marine aviation and ground combat elements in conjunction with the MAGTF commander's intent. If Marine aviation is tasked in common user manner then the Marine logistics capability will be diffused by supporting elements that are pursuing separate objectives. In the end, the entire MAGTF capability is watered down and synergy is lost. This is not saying that there are not occasions when separate Marine elements can be used to accomplish other joint mission. However, it is essential that the joint component commander tasks only those Marine elements in excess of those required to accomplish the MAGTF mission.[32]

Recommendations

CJTF staffs should plan carefully about what level of decoupling they will allow. Unless it is absolutely necessary, they should take care to not break-up combat capability in order to get a very specific resource immediately. Moreover, they need to designate who will have the authorization to obligate military resources in this common user,

---

[32] Department of Defense, Joint Publication 3-56.1 Chap IV. *Command and Control*

networked environment. Unlike computer applications, military resources are bound by space and time. Once they are allocated, it takes time and physical resources to reconstitute them after a mission.

Finally, the concepts of NCW and EMW need to be tested and exercised together and in many scenarios. The Marine Corps needs to keep what works, constantly learn more and incorporate into standing procedures those lessons that are pervasive to multiple scenarios. Probably the most important factor that will bring successful melding of these two concepts is to test, exercise and retest.

Conclusion

There should be no sense of competition between these two concepts.   As warfare concepts they are compatible.   Their differences exist in their focus and the manner they articulate warfare. The Marine Corps' EMW concept emphasizes the realities of confusion, human factors, danger and uncertainty to craft a concept that relies on well trained and motivated people.   The NCW concept is about how the network will provide synergy and added combat power by accomplishing tasks that formerly required standing forces.   EMW is about tailored forces to accomplish a mission and using maneuver to get there.   NCW is about the network helping to share resources in order to get the right combat capability to the right place and time. EMW on the battlefield today will rely heavily on a robust and ubiquitous network.

---

for Joint Air Operations, 9. http://www.adtdl.army.mil/cgi-bin/atdl.dll/jt/3-56_1/3-56_1ch4.htm, 5/15/2003.

Bibliography

1. Alberts, David S., John J. Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*, Washington, D.C., DoD C4ISR Cooperative Research Program, 1990.

2. Clark, Vern Adm. US Navy, "United States Navy Sea Power 21: Projecting Decisive Joint Capabilities" *Proceedings,* October 2002, http://www.chinfo.navy.mil/navpalib/cno/proceedings.html.

3. Clausewitz, Carl Von, *On War*, Princeton, Princeton University Press, 1976.

4. Greenemeier, Larry, "Utility Computing Meets Real Life," *Information Week* 936, April 21, 2003, 54-59.

5. Hagee, Michael W., "The Timeless Realities of Human Conflict: I MEF (I Marine Expeditionary Force) Focuses on "a Single Integrated Battlespace,"' *Sea Power* 44, no. 11.

6. Department of Defense, Joint Publication 3-56.1 Chap IV. *Command and Control for Joint Air Operations,* 9. http://www.adtdl.army.mil/cgi-bin/atdl.dll/jt/3-56_1/3-56_1ch4.htm, 5/15/2003.

7. Stone, Andrea, "Room with a View," *Marine Corps Times* 5, no. 13, April 7, 2003.

8. Thomas, John R. BGen USMC, "Transforming Marine Corps C4," Marine *Corps Gazette* 86, no.8, Aug 2002.

9. United States Marine Corps, Marine Corps Doctrinal Publication 1-0, *Marine Corps Operations*, Washington D.C.

10. United States Marine Corps, "Expeditionary Maneuver Warfare: Marine Corps Capstone Concepts" in *United States Marine Corps Concepts and Programs 2002*.